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ABSTRACT

This study, which took place in Maastricht (Netherlands), examined whether motivation affects the reliability of students' ratings about tutor behavior and whether different types of students have different expectations about tutor behavior. Four types of motivation were measured: intrinsic, extrinsic, and achievement motivation, and fear of failure. In addition, students' expectations about the importance of certain elements of tutor behavior were investigated. Student evaluation of instruction surveys were administered in 3 first-year courses in economics and business at the University of Limburg to 28 tutor-led small groups of 12 students each. The survey asked students to evaluate the performance of their small group's tutor. A total of 253 students completed the forms. Results showed that motivation was significantly, though weakly, related to students' ratings and students' expectations of tutor behavior. In addition, evaluations of tutor behavior were significantly correlated with intrinsic motivation, i.e., students' interest in course subject matter. Examination of the gap between students' perception of what tutors actually do and what tutors ought to do was found to be related to fear of failure. That is, the more students were afraid to fail, the less a tutor did what the student thought he/she ought to do and the more the student depended on the tutor's supportive role. (Contains 11 references.) (JB)

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Effects Of Motivation On Students' Ratings Of Tutor Behavior

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Abstract

Student evaluations of instruction are a key instrument in research on tutor behavior in problem-based programs. The purposes of the present study are twofold. First, it attempts to examine whether motivation affects the reliability of students' ratings about tutor behavior. Second, it investigates whether different types of students have different expectations about tutor behavior. Four types of motivation were measured; intrinsic, extrinsic, and achievement motivation, and fear of failure. In addition, students' expectations about the importance of certain elements of tutor behavior were investigated. The results show that motivation is significantly, though weakly, related with students' ratings and students' expectations of tutor behavior.

Introduction

Studies on tutor effectiveness receive increasing attention in the literature on problem-based learning (e.g. Albanese & Mitchell, 1993). In general two kinds of studies may be identified: 1) studies which seek to identify essential characteristics of tutor behavior that are required in problem-based tutorials, 2) studies that focus on degree of expertise in subject-matter required for effective tutoring. The first category contains empirical studies that are concerned with the question what kind of tutor skills are needed in the tutorial process to fulfil the tutor's tasks efficiently (e.g. Wilkerson, 1992; Moust, 1993). These studies seek to identify skills that are important in guiding the work of discussion groups. For example, Moust (1993) found that an essential tutor skill is the tutor's ability to use vocational language congruent with students' level of competence. The second category consists of studies that examine whether tutors must be experts to realise a certain degree of directiveness in small group work (e.g. Davis, Nairn, Paine, Anderson & Oh, 1992; Moust, 1993).

Student evaluations of instruction are a key instrument in research on tutoring, because of their proven reliability, validity and relatively low costs (Marsh, 1984; Gijselaers & Schmidt, 1991). Student ratings of tutor behavior may be regarded as descriptions of the instructional process going on in small groups. It is generally assumed that raters, students, are replicates (except for random error) in their measuring of the tutors' attributes or characteristics. That is, students within a group will give a similar rating on an item measuring an element of tutor behavior, except for some random error. The amount of random error determines the reliability of ratings. Research has shown that random error -or also called within-group variability- is normally modest or small, depending on the number of students and quality of items, resulting in sufficiently high degrees of reliability. For example, Gijselaers and Schmidt (1991) found that interrater-reliabilities within small groups (when based upon 7 ratings) is normally above .80. In general, this is regarded as adequate to get reliable tutor behavior measures.

Whether differences in ratings between students within groups are to be interpreted as random or as systematic, has been an issue of considerable debate in the literature on student ratings (see for an extensive review, Feldman, 1977). The issue is whether dissimilarities in ratings not only reflect random error, but also systematic error. If the latter is the case, then some of the patterned variability in ratings represents so-called true variance. Differences among students may then result from legitimate or genuine sources of influences on their ratings. However, studies on the relationship between certain attributes of students have in general shown only weak relations between ratings and these attributes. For example, Feldman (1977) mentions that only students' motivation

and expected grade appear to be consistent related to student ratings of instructions. Marsh (1984) found that the effect of Prior Subject Interest on student ratings of instruction was greater than that of any of 15 other background variables considered. The Prior Subject Interest variable was most highly correlated with students' ratings of the course's learning value (*r*s about .4). Ratings with dimensions of teaching behavior were lower (*r*s between .3 and -.12). According to Marsh (1984), higher student interest in the subject matter apparently created a more favorable learning environment and facilitated effective teaching. Comparable results were found in a study by Jones (1981). He showed that students' ratings of teaching are in part related to what they consider as good teaching. Students' criteria about what constitutes good teaching may differ depending on their basic expectations of the course. Highly motivated students tended to give more favorable ratings for the same course than poorly motivated students. In general, it may be concluded from reviews of the student ratings literature (Feldman, 1977, Marsh, 1984) that effects of background variables tend to be small, except for motivation variables and students expectations.

The purpose of the present analysis is twofold. First, it attempts to examine whether motivation variables affect the consistency of ratings about tutor behavior. It tries to clarify the association between types of raters (for example highly motivated Vs poorly motivated) and ratings of tutor behavior. The second purpose of this study is to investigate whether different types of students have different expectations about how a good tutor should behave and if he/she actually performs this behavior in educational practice. Consequently, knowledge about the influence of motivation variables on tutor behavior may enhance a better understanding and interpretation of students' evaluative ratings of the behavior of tutors.

In the present study four types of motivation were measured; intrinsic motivation, extrinsic motivation, achievement motivation and fear of failure. In addition, students' expectations about the importance of certain elements of tutor behavior were investigated. The present study describes findings of a study conducted at the problem-based school of economics and business at the University of Limburg, the Netherlands.

Method

Subjects. During the 1993-94 academic year at the University of Limburg, Maastricht, the Netherlands, student evaluation of instruction surveys were administered in 3 first year courses of the problem-based school of economics and business. Student evaluation instruments were collected in 28 small groups, consisting of 12 students each.

An average of 75% of the students (=253 students) enrolled in small groups completed the survey forms.

Description of the curriculum. The four-year economics and business curriculum consists of a four seven weeks course periods. Each course follows the same problem-based format. Students met with their tutor in small-group tutorials, twice a week for two hours, to analyse and discuss problems that are related to the general multidisciplinar course theme. At the beginning of each seven-week course period students were randomly assigned to tutorial groups.

Instrument. At the end of each course a questionnaire was administered before the examination. Courses usually contained 25 groups, representing 12 students for each group. In every course 10 or 9 small groups were asked to fill out the questionnaire. The questionnaire contained two sections. The first section on tutor behavior consisted of three-point Likert scale items (categories ranging from 1 = "tutor insufficiently showing the particular behavior" to 3 = "tutor showed behavior in a sufficient way") about various aspects of tutor's behavior. The section on tutor behavior consisted of 19 items measuring specific elements of tutor behavior and one overall evaluation item. Previous validation research showed that three dimensions were underlying the specific tutor behavior items: 1) knowledge about subject-matter of the course, 2) procedural teaching skills for small group work, 3) tutor's motivation and interest in students' learning experiences (Dolmans et al, 1993). The internal consistency of the "Subject-matter Knowledge" scale was .74 (8 items), for the "Tutor's Teaching Skills" scale (6 items) .62, for the Tutor's Motivation scale (5 items) .65. The inter-rater reliability (intraclass-correlation) when based upon 7 ratings within a group was above .80 for the individual scales. In addition, students were asked to rate for every specific tutor behavior item the necessity of that behavior: "1=behavior is unimportant for problem-based tutorials", "2=behavior is appropriate, but not very important for problem-based tutorials", and "3=behavior is important for problem-based tutorials". Exhibit 1 contains a sample of the section I items on tutor behavior.

The second section of the questionnaire contained motivation items taken from an inventory (Nuy, 1991) that aims to measure study approaches in problem-based learning (I.S.A.P.L.). This inventory was developed within the research tradition on learning styles of college students (e.g. Schmeck, 1988). The motivation categories were: 1) Intrinsic motivation (Interest in study content; challenged by questions and problems), 2) Achievement Motivation (Need to excel; high standards of achievement), 3) Fear of failure (Avoidance of stress and uncertainty), and 4) Extrinsic motivation (Instrumental function of studying). Each category contained 8 Likert-type items. The internal consistencies of the individual motivation scales were above .75.

Exhibit 1: Sample of items on tutor behavior in section I of the evaluation survey.

Tutor behavior.	As a description of this tutor: 1 = tutor insufficiently showing the particular behavior 2 = Neutral 3 = tutor showed behavior in a sufficient way			The necessity of this behavior was: 1 = behavior is unimportant for problem-based tutorials 2 = behavior is appropriate, but not very important for problem-based tutorials 3 = behavior is important for problem-based tutorials		
Knowledge about subject- matter of the course						
• The tutor appeared to be aware of the principles of problem-based learning.	1	2	3	1	2	3
• The tutor encouraged a thorough review of the problems after studying	1	2	3	1	2	3
• The tutor displayed a fair understanding of the course's contents.						
•						
Procedural teaching skills for small group work						
• The tutor stimulated evaluation of tutorial group meetings.	1	2	3	1	2	3
•						
Tutor's motivation and interest in students' learning experiences						
• The tutor invited students to express their own opinions and ideas.	1	2	3	1	2	3
•						

Analysis. Data were analysed at the individual student's level. Student ratings were summarized by scores on the three tutor behavior scales and four motivation scales. Also a measure called the "Gap factor" was computed that takes into account the difference between the rating on a tutor behavior item and the necessity of that tutor behavior:

$$G = (Behavior - Importance)$$

The size and direction of the gap factor serves as an indication of students' perceptions of the extent whether a tutor behavior was congruent with students' expectations. In general three situations may occur.

Situation I: $\text{Rating}_{(behavior)} = \text{Rating}_{(importance)} \Rightarrow G \approx 0$

Situation II: $\text{Rating}_{(behavior)} \geq \text{Rating}_{(importance)} \Rightarrow G \geq 0$

Situation III: $\text{Rating}_{(behavior)} \leq \text{Rating}_{(importance)} \Rightarrow G \leq 0$

A negative gap factor indicates that tutor's behavior was less in the direction than students' regarded as important for problem-based learning. A positive gap factor indicates the opposite: a tutor showed behavior more than needed. A zero gap factor suggests that tutor's behavior was congruent with student's needs.

Results

Table 1: Correlations between motivation and tutor behavior variables.

		Intrinsic Motivation	Extrinsic Motivation	Achievement Motivation	Fear for Failure
1.	Intrinsic Motivation	1.00			
2.	Extrinsic Motivation	-.46**	1.00		
3.	Achievement Motivation	.41**	-.11	1.00	
4.	Fear of failure	-.04	.36**	.04	1.00
5.	Tutors' Subject-matter Knowledge	.15*	-.07	-.01	-.06
6.	Tutor's Teaching Skills	.15*	-.04	.08	-.12
7.	Tutor's Motivation	.11	-.03	.03	-.06
8.	Gap-factor Subject-matter Knowledge	-.05	.01	-.01	-.18**
9.	Gap-factor Tutor's Teaching Skills	-.03	-.04	.08	-.13*
10.	Gap-factor Tutor's Motivation	-.06	-.03	.03	-.21**

Note * - Signif. LE .05 N = 253

**- Signif. LE .01

As mentioned in the introduction, the purposes of the present study are twofold. First, it attempts to examine whether motivation variables affect the consistency of ratings about tutor behavior. The second purpose of this study is to investigate whether different types of students have different expectations about how a good tutor should behave and if he/she actually performs this behavior in educational practice.

The first issue is whether ratings are linked to differences in student types within classes or discussion groups. As Feldman (1977) pointed out: "together with the fact that students are not trained as either observers or raters, it might well be expected that ratings done in typical classroom settings would be dependent to some extent on the characteristics and experiences of the student observers". In this particular case, the major question is whether differences in types of motivation influence students' ratings

of tutor behavior. This question can be approached by simply correlating students' evaluation of tutoring with measures of motivation.

Table 1 contains the simple correlations between the four motivation variables, gap-factors and students' ratings of tutor behavior. The findings demonstrate that student's intrinsic motivation is weakly related to student's ratings of tutor's subject knowledge and teaching skills. Students who are more intrinsically motivated tend to give slightly higher ratings (.2 on a 3-point scale) for tutors' subject-matter knowledge and tutor's teaching skills. Extrinsic motivation and achievement motivation are not related to ratings of tutor behavior. Correlations among the motivation variables show that intrinsic motivation is positively related to achievement motivation. Fear of failure is associated with extrinsic motivation. Intrinsic motivation seems to be a variable that influences some aspects of effective tutoring. Higher student interest in subject-matter of a course apparently creates a more favorable learning environment and hence facilitates effective tutoring. A related interpretation is that higher student interest may positively influence student's observation of tutor behavior.

As mentioned in the method section, correlational analyses were conducted at the individual level. However, in the present case interpretation of the correlational results must be made with caution. Simple correlations masks much of the systematic variance that may exist between various tutorial groups. Although random assignment tot tutorial groups took place, it may be possible that some groups contained more highly (or poorly) motivated students than might be expected by chance alone. Feldman (1977) pointed out that, 'the possibility exists that certain kinds of "fit" (both perceived and actual) between teachers and different students in their groups are related to ratings'. This is the possibility of interaction effects between types of motivation, or composition of the discussion group as pertaining to motivation, and various tutors in different discussion groups. Consequently, students' motivation may be differentially affected by specific discussion groups or tutors.

Analyses of variance provide an approach to address the issue whether, next to main effects of motivation, a main effect of discussion group and interaction effects exists. ANOVA makes it possible to determine whether the obtained correlations are confounded by effects of tutorial groups. In the present study, student rating data were analyzed at the class level through two-way analyses of variance. These analyses were designed to address the question whether the correlations between motivation and student's ratings of tutor behavior were confounded by effects of various discussion groups. Table 2 and 3 contain examples of the results of the two-way analyses of variance. In this particular main effects of motivation and discussion groups were

independent variables. Students' rating of tutor subject-matter knowledge and tutoring skills were dependent variables.

Table 2: Tutors' Subject-matter knowledge

Source of Variation	Sum of Squares	DF	Mean Square	F	Sig of F
Main Effects	10.675	30	.356	5.162	.000
Intrinsic motivation	.715	3	.238	3.459	.018
Discussion group	9.675	27	.358	5.198	.000
2-Way Interactions	4.408	68	.065	.940	.606
Intr. Mot * Disc. group	4.408	68	.065	.940	.606
Explained	15.083	98	.154	2.233	.000
Residual	10.616	154	.069		
Total	25.699	252	.102		

253 cases were processed.

Table 3: Tutors' Teaching Skills

Source of Variation	Sum of Squares	DF	Mean Square	F	Sig of F
Main Effects	12.725	30	.424	5.720	.000
Intrinsic motivation	.688	3	.229	3.094	.029
Discussion group	11.017	27	.408	5.502	.000
2-Way Interactions	4.902	68	.072	.972	.544
Intr. Mot * Disc. group	4.902	68	.072	.972	.544
Explained	17.628	98	.180	2.425	.000
Residual	11.421	154	.074		
Total	29.049	252	.115		

253 cases were processed.

The results in table 2 and 3 show that significant main effects exist for intrinsic motivation and discussion group. No interaction effects were found. The degree of association between motivation and students' ratings of tutor behavior may be calculated as η^2 (which is equal to the proportion of variance explained). For table 2 η^2 = .715/25.699 = .028, which is comparable with a simple correlation of .16. For table 3 η^2 = .688/29.0499 = .024, which is comparable with a simple correlation of .15. Both estimates of η^2 show that the simple correlations in table 1 are not inflated by effects of discussion groups. Correlations and η^2 are the same. Similar results were found for other relations between the motivation variables and students' ratings of tutor behavior. In conclusion, the main effects motivation and discussion group are independent.

Hence, calculations of correlations at the individual level provide adequate estimates of the relation between motivation and students' evaluations of tutor behavior.

The second purpose of this study was to examine whether relations exist between students' expectations about education and ratings of tutor behavior. For each item of the evaluation survey the gap between the ideal and the actual tutor behavior was measured. The size of the gap factor serves as an indication of students' perceptions of the extent by which the actual behavior falls short of the ideal (Jones, 1981). The results in table 1 show that students with a higher degree of fear of failure tend to give slightly negative scores on the gap factor. That is, the more students indicate they have fear of failure, these students perceive that actual (or perceived) tutor behavior is less corresponding with tutor behavior being regarded as necessary. This means that students with high fear of failure view tutor behavior, as operationalized in our questionnaire, as less sufficient than required. Interestingly, other motivational background characteristics are not related to the score on the gap factor.

Discussion and Conclusion

The present study attempts to examine whether motivational background is related to students' ratings of tutor behavior. The focus of this study is twofold: first it tries to clarify whether students are interchangeable as raters (is within-class variability due to random error alone?), second it seeks for relations between types of students and elements of tutor behavior that are perceived as essential for problem-based learning. With respect to the first purpose of this study it was found that evaluations of tutor behavior were significantly correlated, though modest to weak, with intrinsic motivation (students' interest in course subject matter). Other motivation variables were not related to ratings of tutor behavior. Whether this correlation is interpreted as "rating bias" or "actual different behavior of the rated object" depends in large part on the acclaimed objectiveness of student ratings. It might be the case that highly intrinsic students indeed see different things in tutor behavior than students who are less interested in a course. Or another interpretation may be that highly intrinsic motivated students create a more favorable learning environment, which in turn positively influences tutor behavior.

The second purpose of this study was to examine whether students have different expectations about tutor behavior, given their motivational background. So-called gap-factors for tutor behavior (the gap between "is" and "ought") were calculated and related to motivation. The relative size of the gap-factor may be interpreted as an indication of the difference between what students perceive as important and how tutoring actually

took place. The results showed that fear of failure was consistently, though modest, related with the gap-factors. A relative high degree of fear of failure was associated with negative gap-factors. That is, the more students are afraid to fail, the less a tutor does what he should do in the opinion of these students. Students with a high degree of fear of failure consider the supporting role of the tutor as very important.

It was shown that different groups of students tend to perceive learning environment differently with respect to how tutors should behave. An additional outcome of this study is that students' evaluations of actual tutor behavior are to a very low degree affected by motivational background. As such, this latter outcome corresponds with previous research on the reliability of student ratings. The present study shows that patterned variability in student ratings represents to some extent true variance and not systematic error. Expectancies of students, as a result of students' motivation, may be regarded as valuable information to interpret ratings of tutor behavior. Clearly, the results from the present study ask for further in-depth studies on the role of motivation in the functioning of problem-based small groups.

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